021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
Sheets of drawings 1 of 25

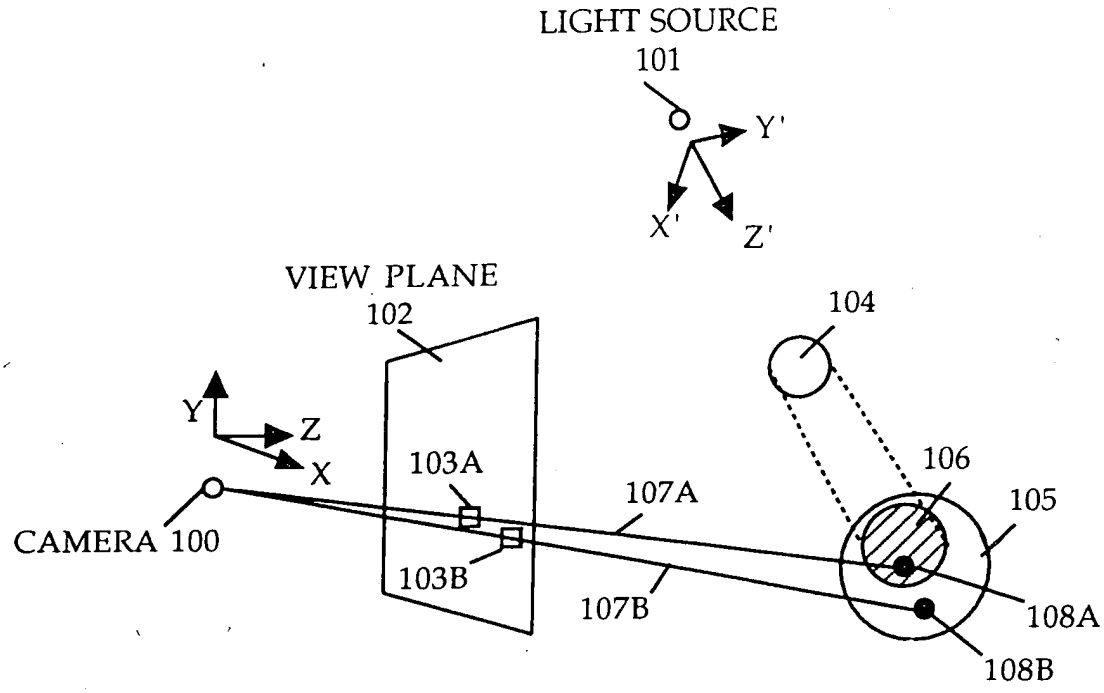

FIGURE 1

PRIOR ART

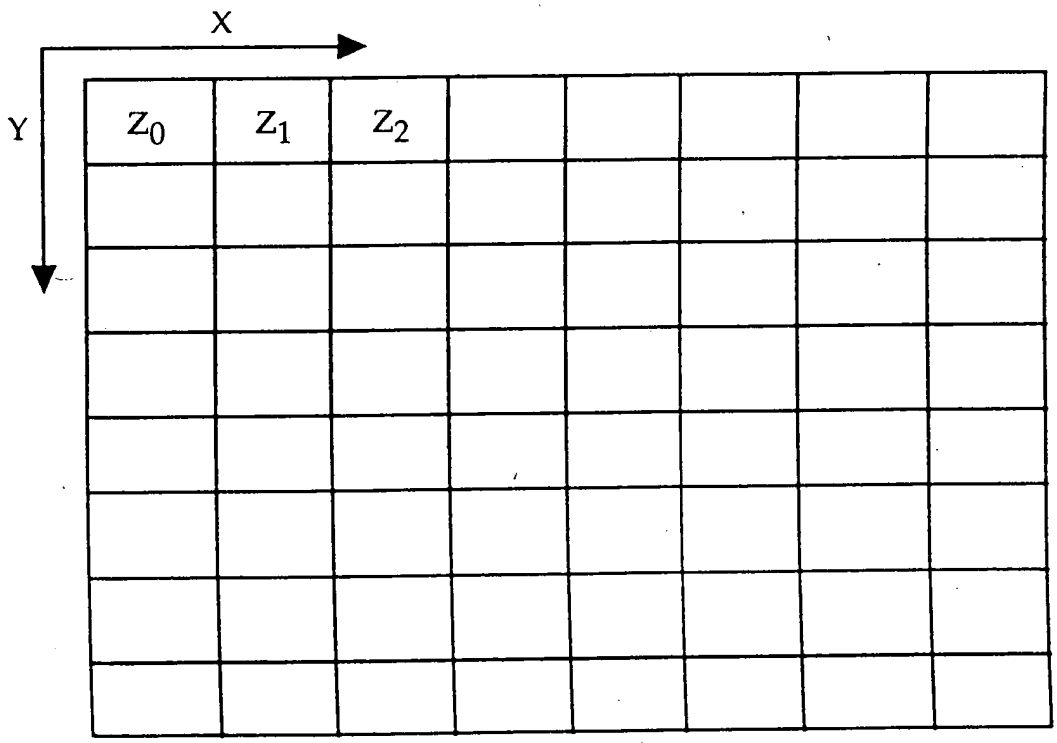

FIGURE 2

PRIOR ART

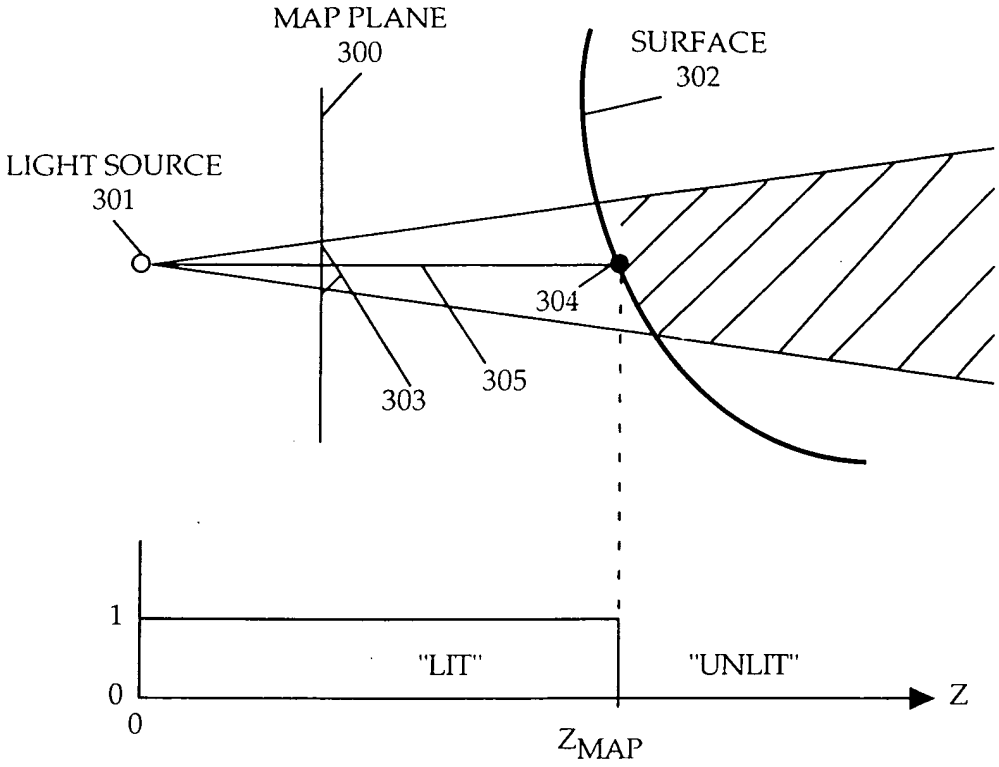

FIGURE 3

PRIOR ART

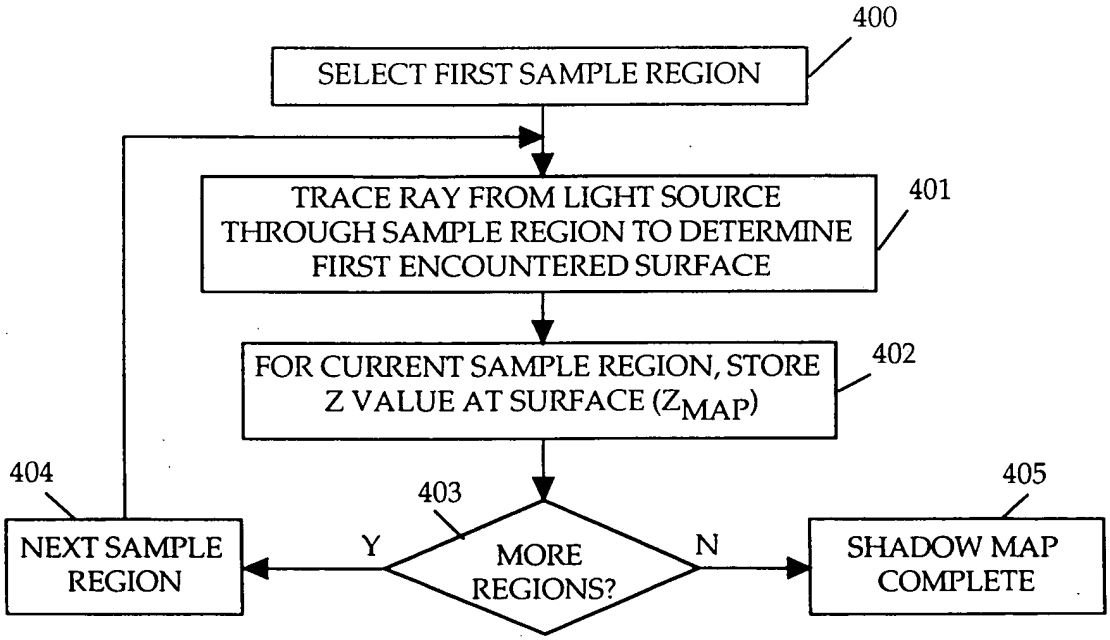

FIGURE 4

PRIOR ART

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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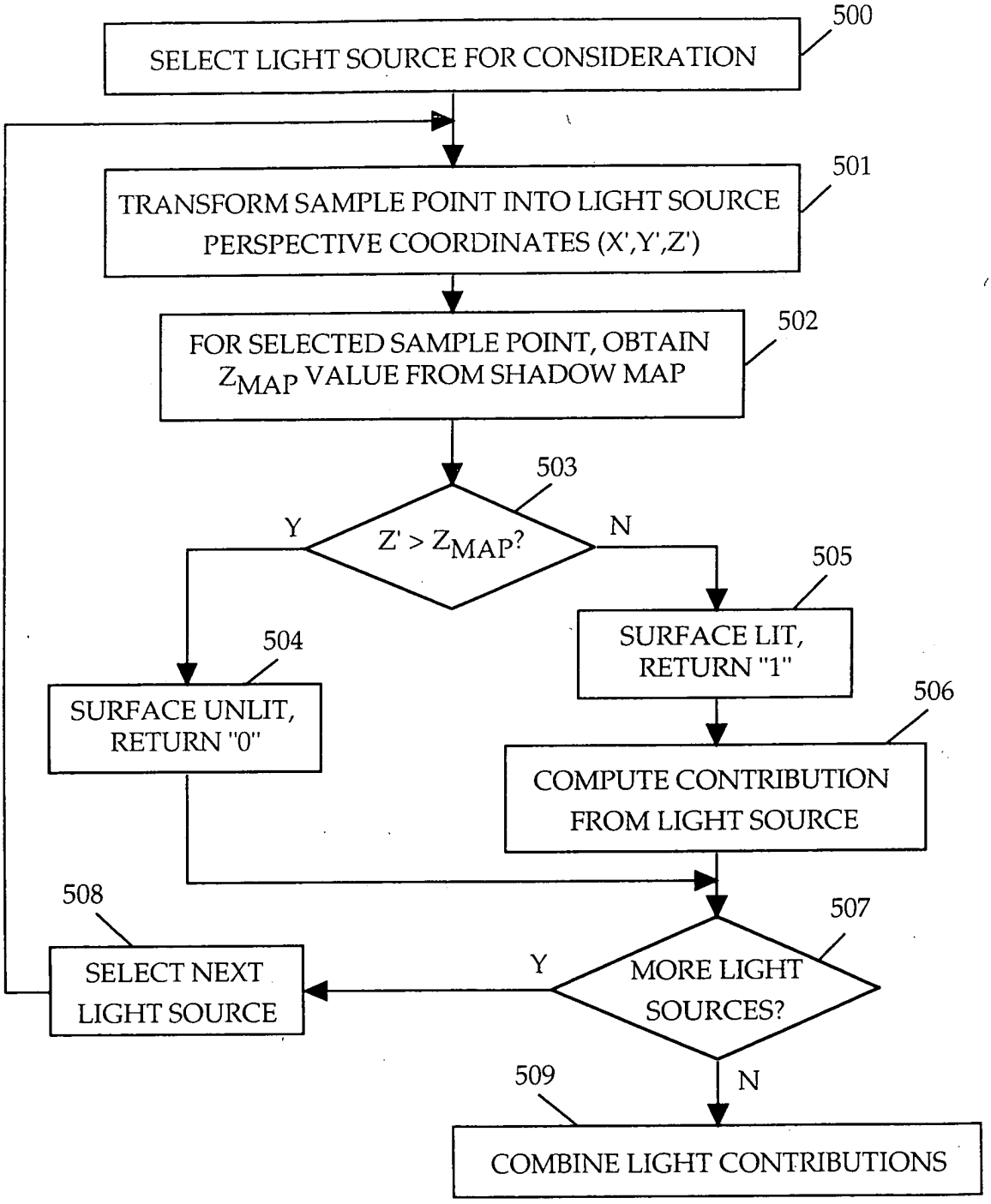
FIGURE 5



PRIOR ART

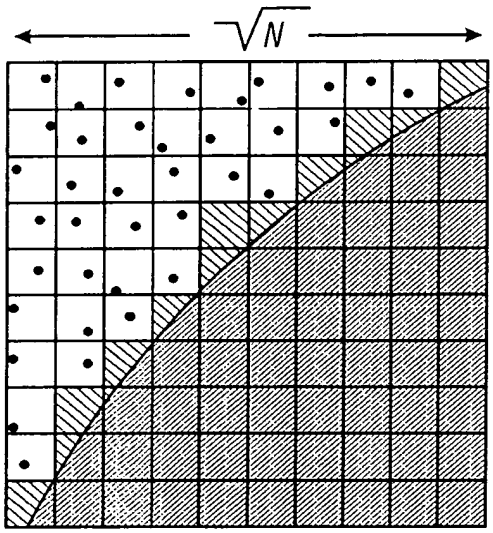


FIGURE 6A

PRIOR ART

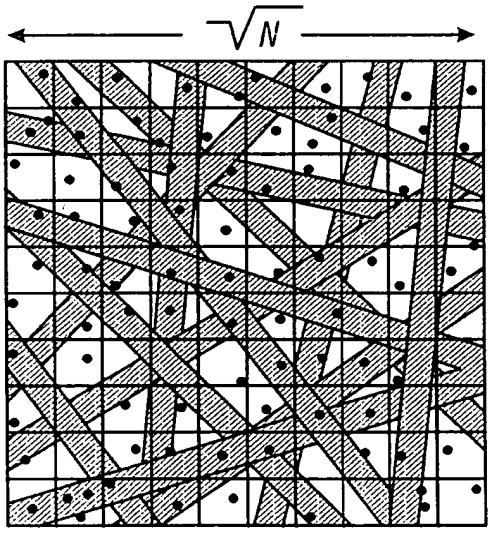


FIGURE 6B

PRIOR ART

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Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
Sheets of drawings 5 of 25

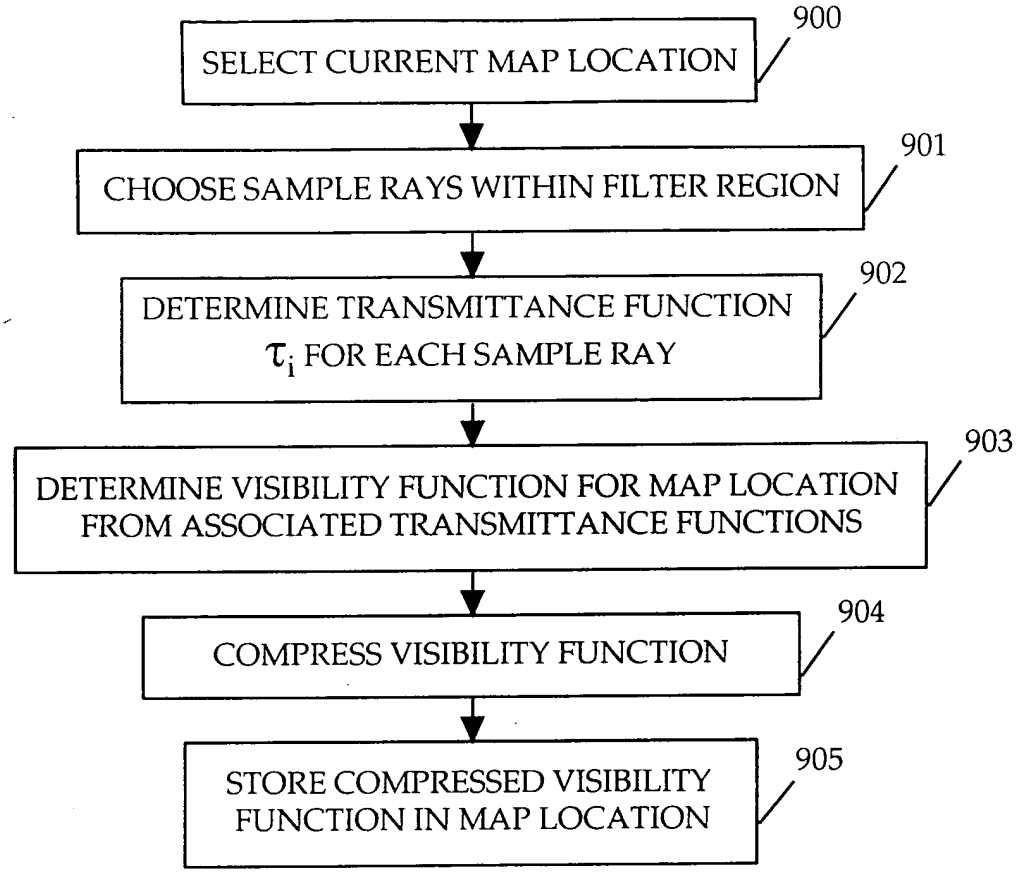

FIGURE 9

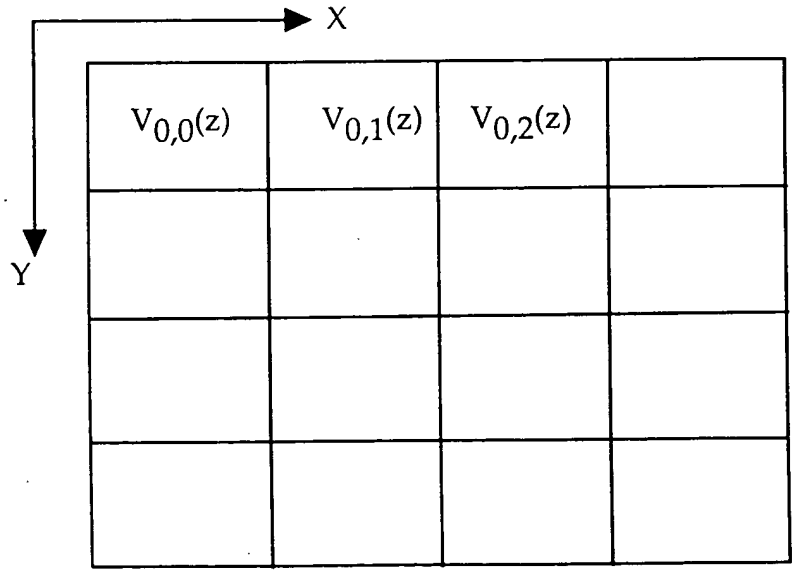

FIGURE 7

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Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
Sheets of drawings 6 of 25

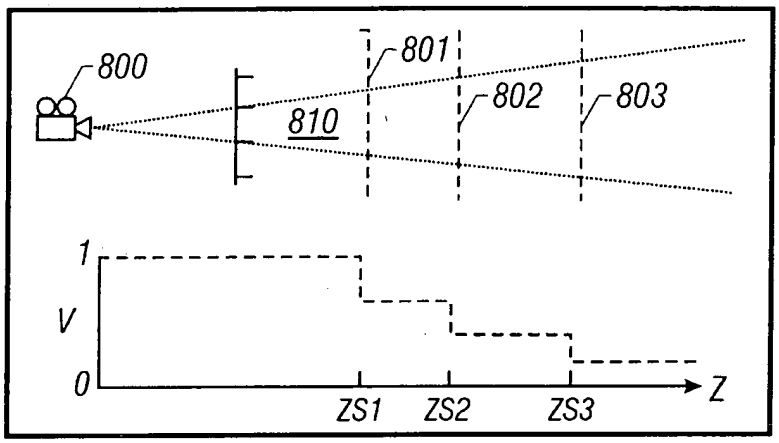

FIGURE 8A

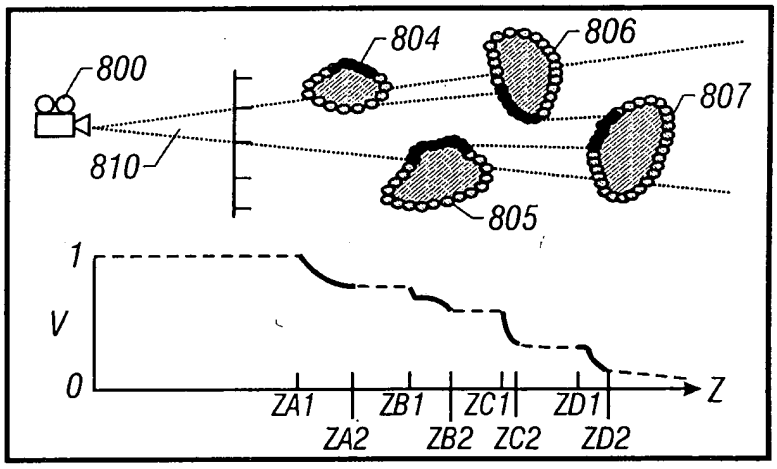

FIGURE 8B

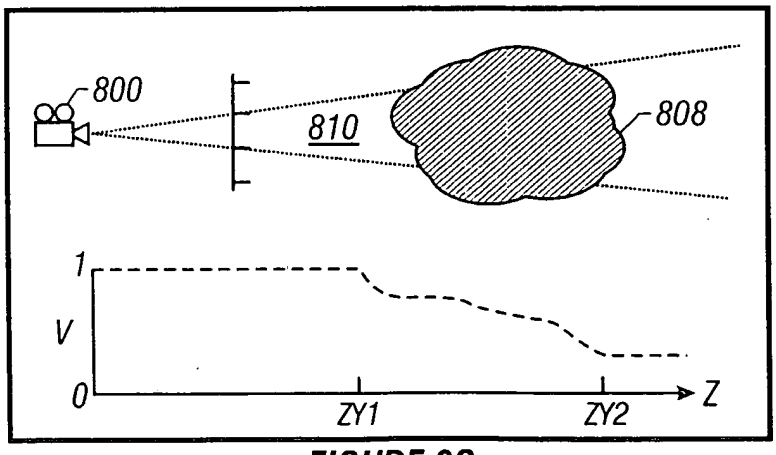

FIGURE 8C

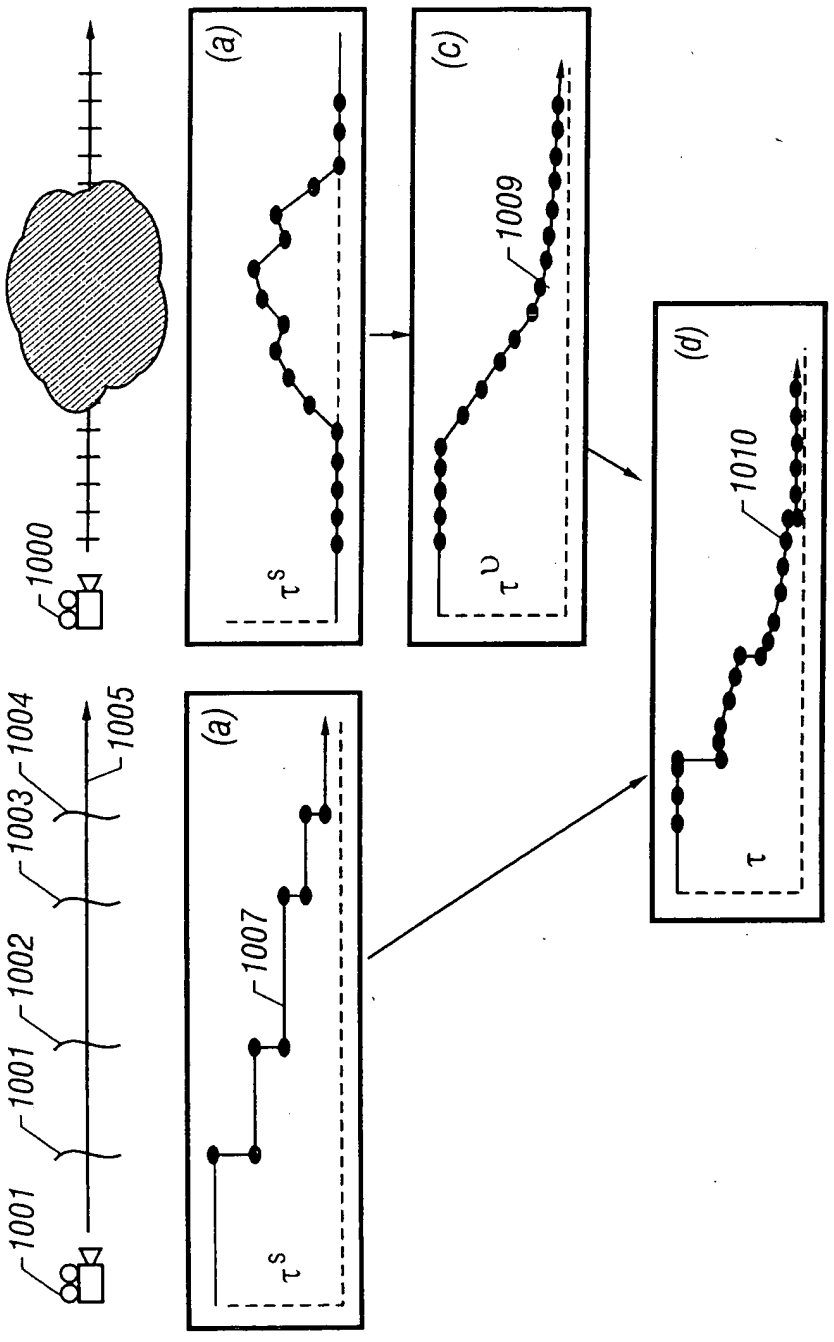
1000
(a)
τ^s
(c)
1009
τ^v
(d)
1010
τ
1001
1001
1002
1003
1004
1005
(a)
1007
τ^s

FIGURE 10

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Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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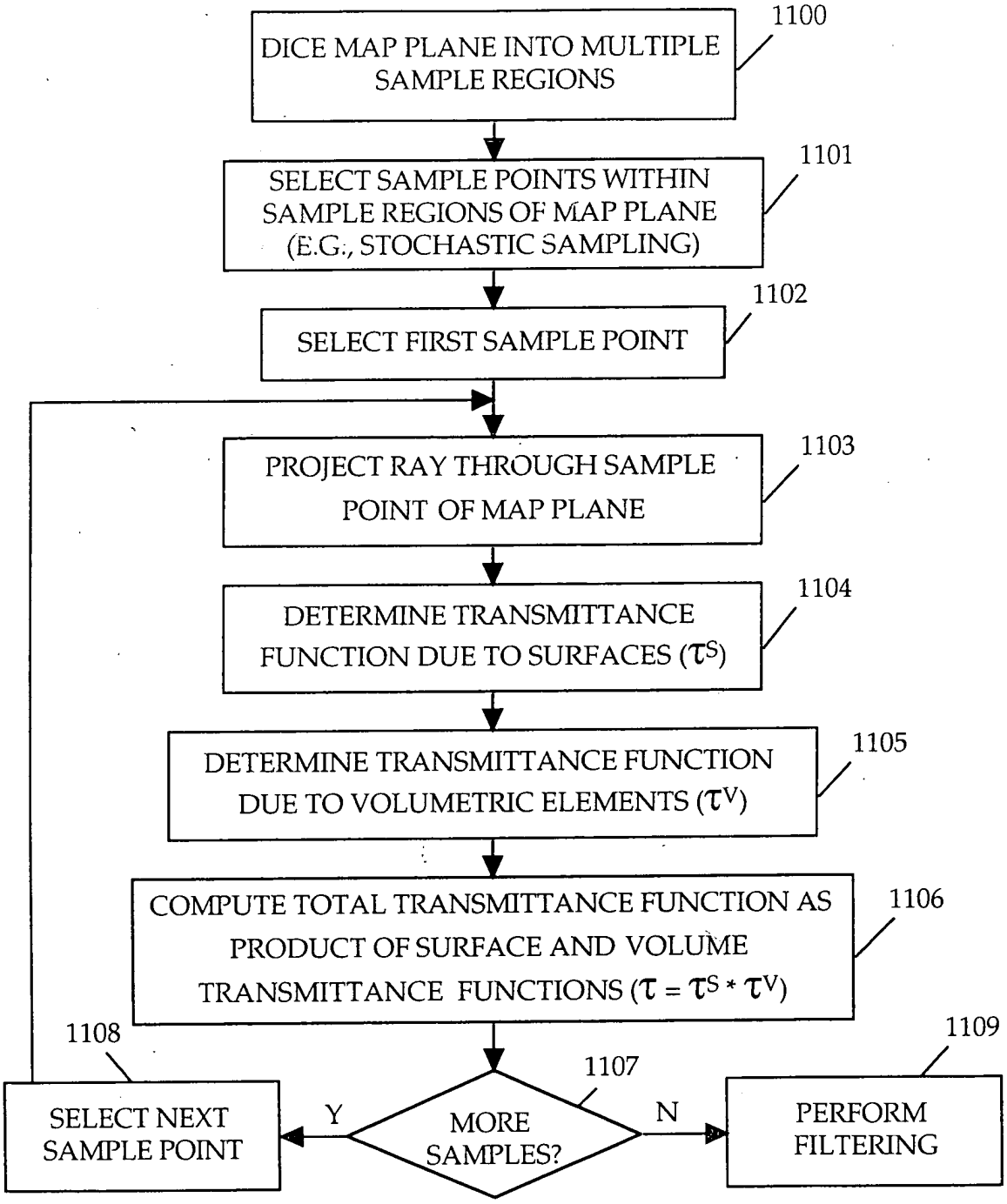

FIGURE 11A

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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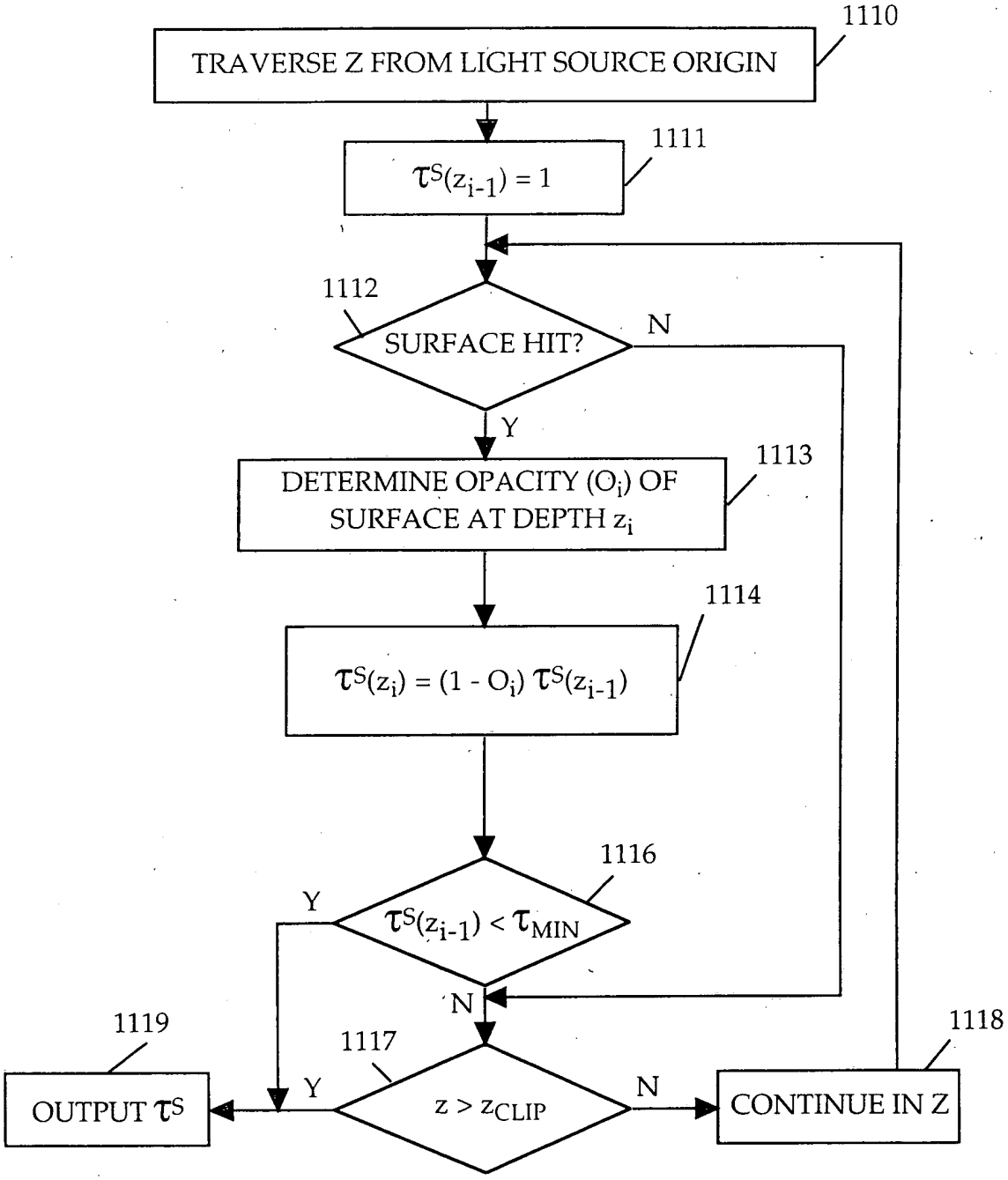

FIGURE 11B

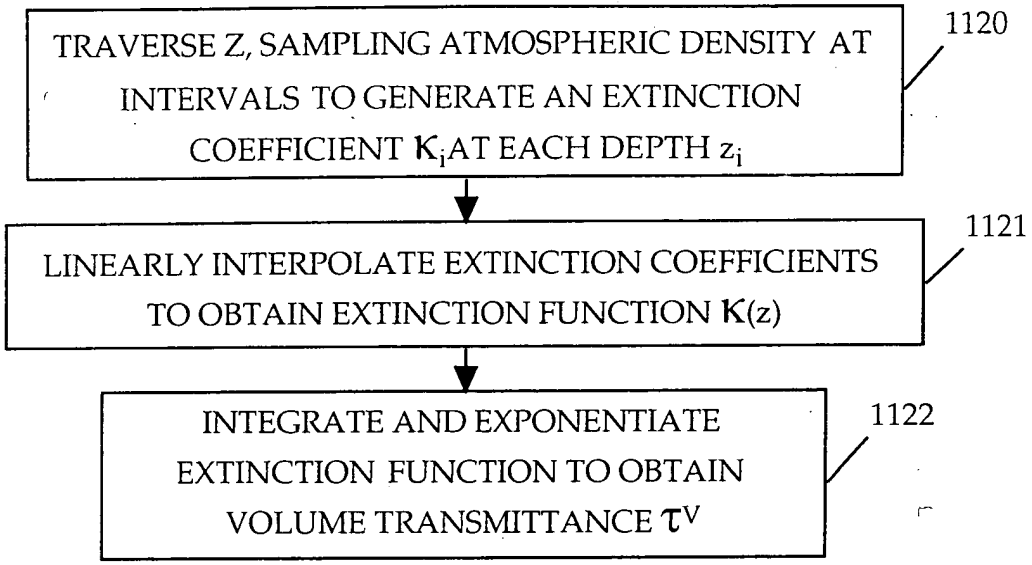

FIGURE 11C

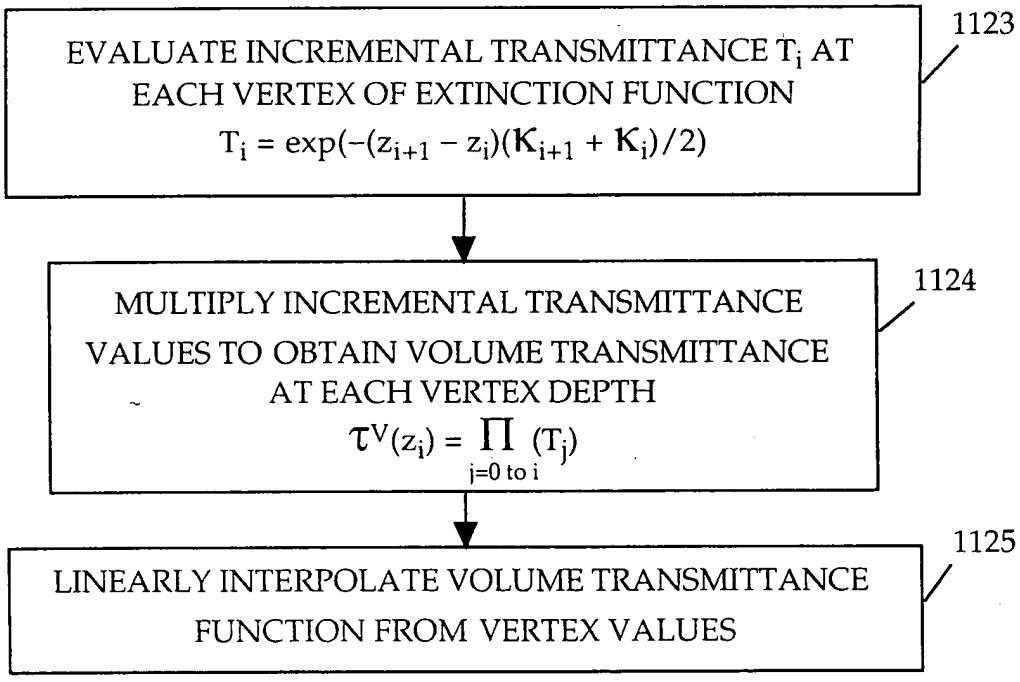

FIGURE 11D

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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C	B	B	C
B	A	A	B
B	A	A	B
C	B	B	C

FIGURE 12

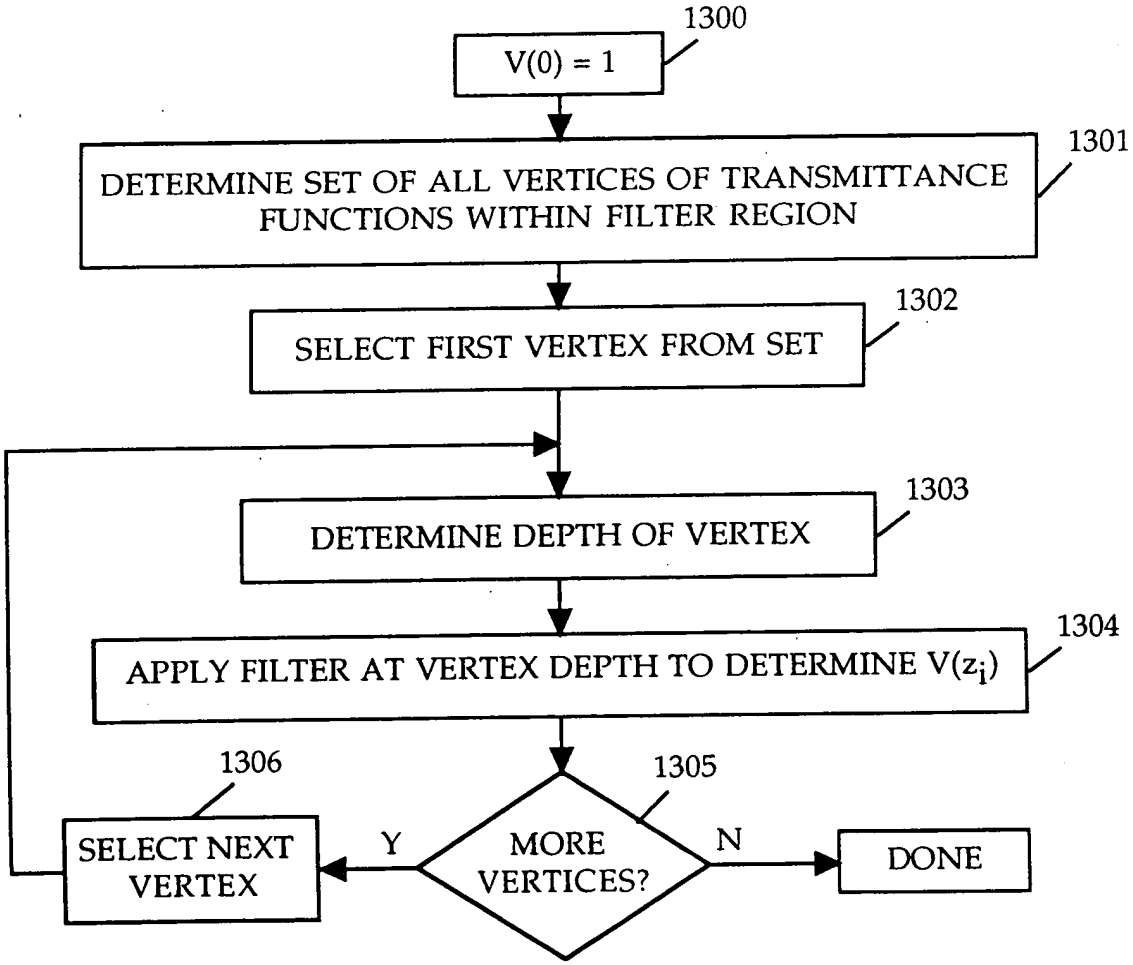

FIGURE 13A

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
Sheets of drawings 12 of 25

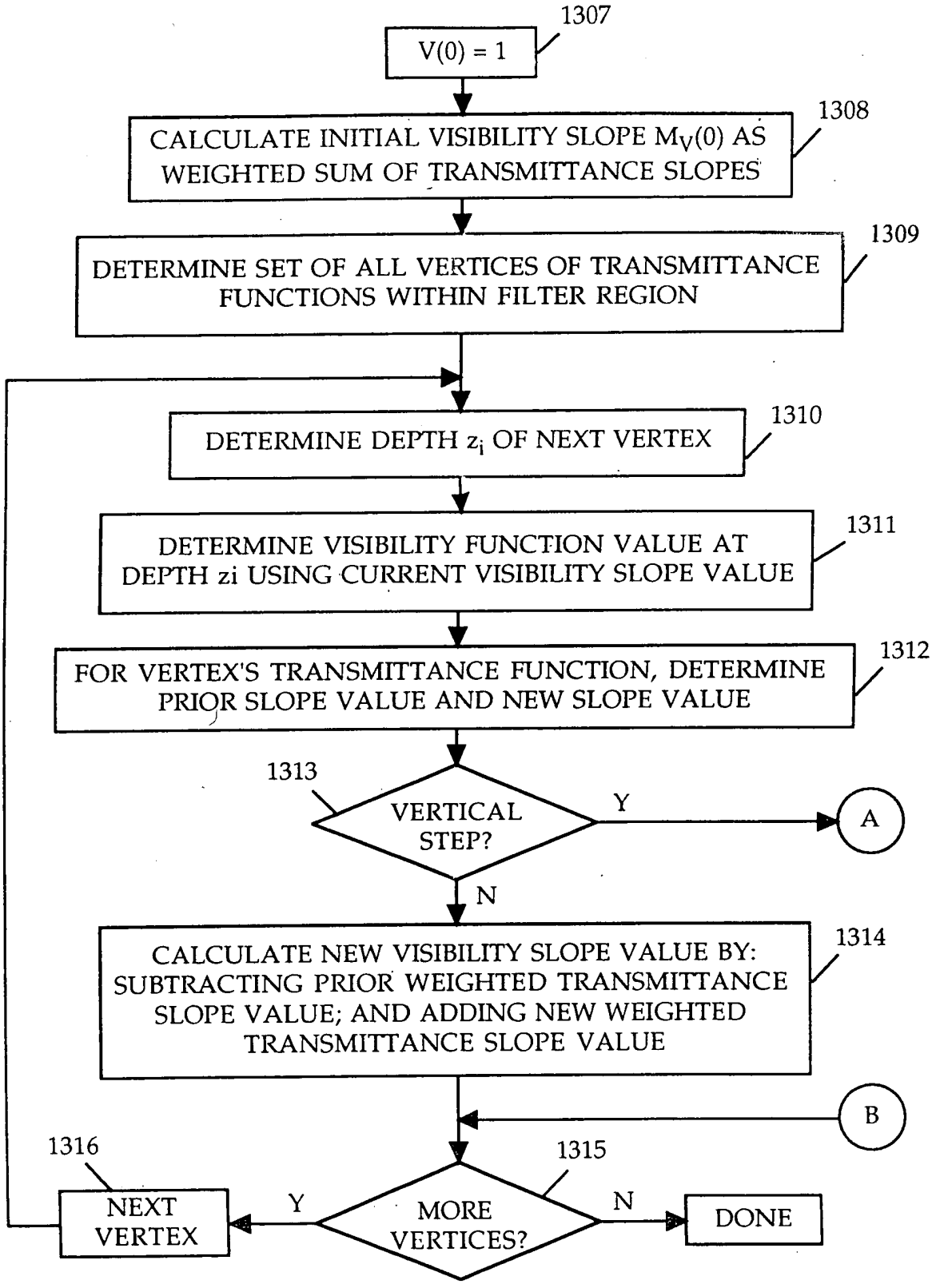

FIGURE 13B

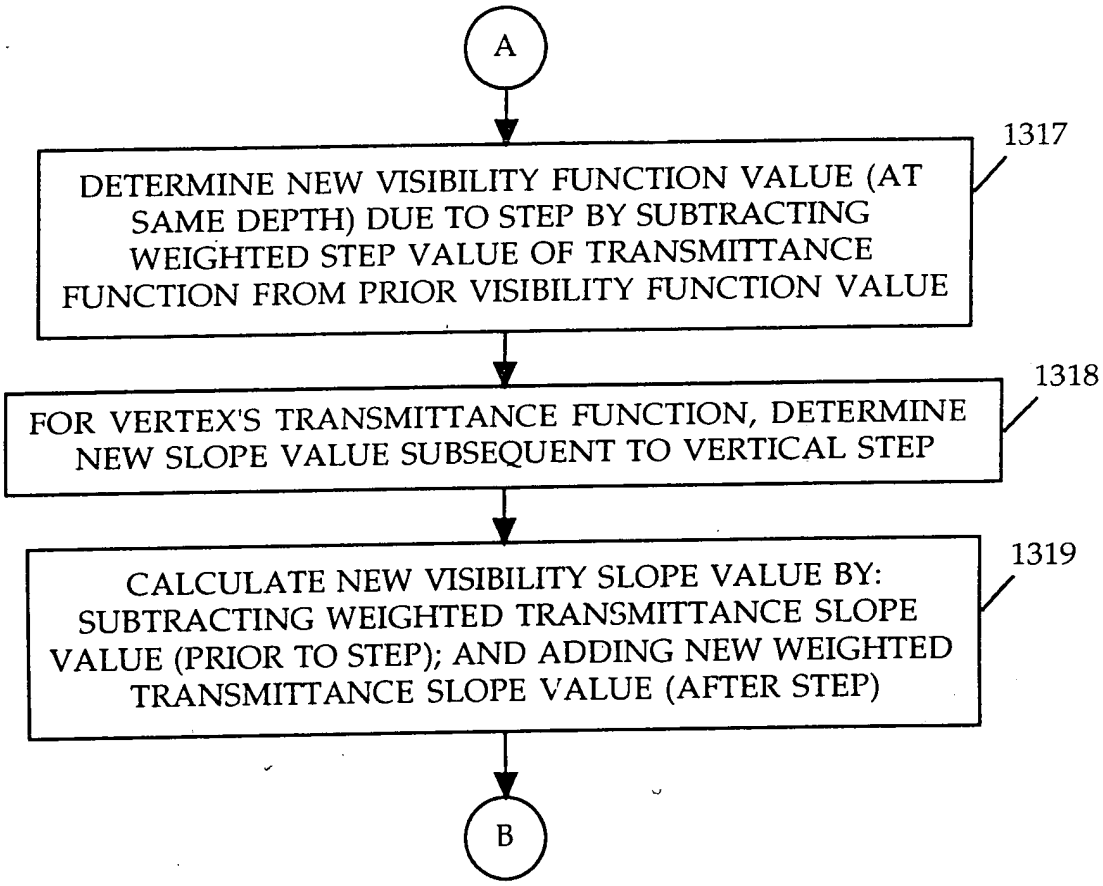
A
DETERMINE NEW VISIBILITY FUNCTION VALUE (AT SAME DEPTH) DUE TO STEP BY SUBTRACTING WEIGHTED STEP VALUE OF TRANSMITTANCE FUNCTION FROM PRIOR VISIBILITY FUNCTION VALUE
1317
FOR VERTEX'S TRANSMITTANCE FUNCTION, DETERMINE NEW SLOPE VALUE SUBSEQUENT TO VERTICAL STEP
1318
CALCULATE NEW VISIBILITY SLOPE VALUE BY: SUBTRACTING WEIGHTED TRANSMITTANCE SLOPE VALUE (PRIOR TO STEP); AND ADDING NEW WEIGHTED TRANSMITTANCE SLOPE VALUE (AFTER STEP)
1319
B

FIGURE 13C

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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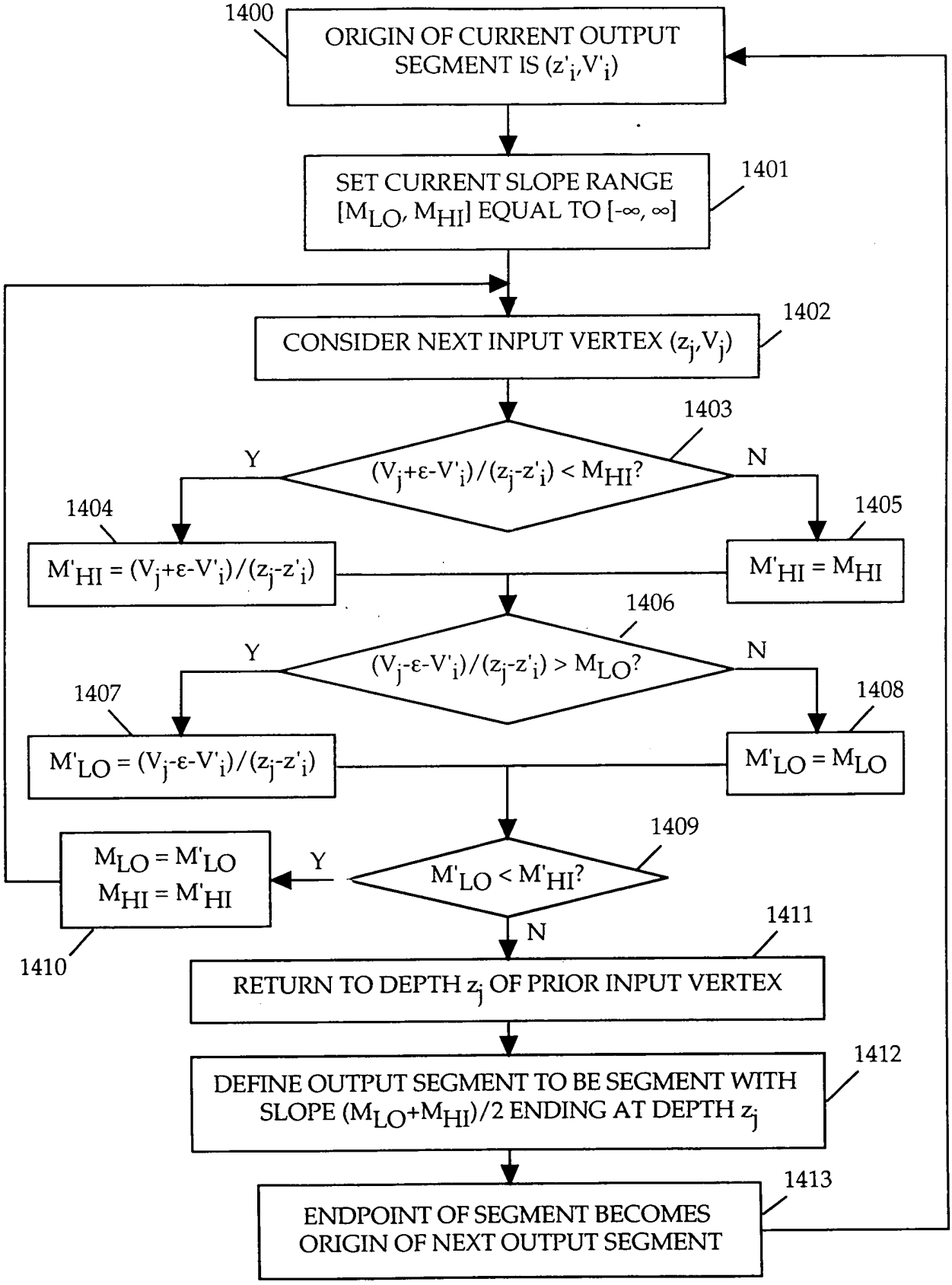

FIGURE 14

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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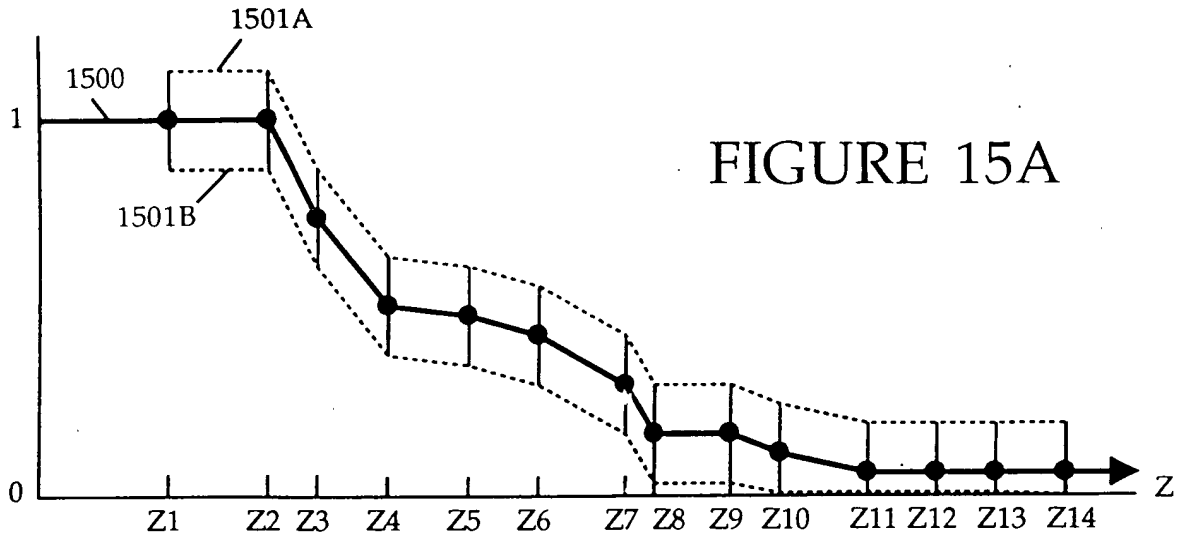

FIGURE 15A

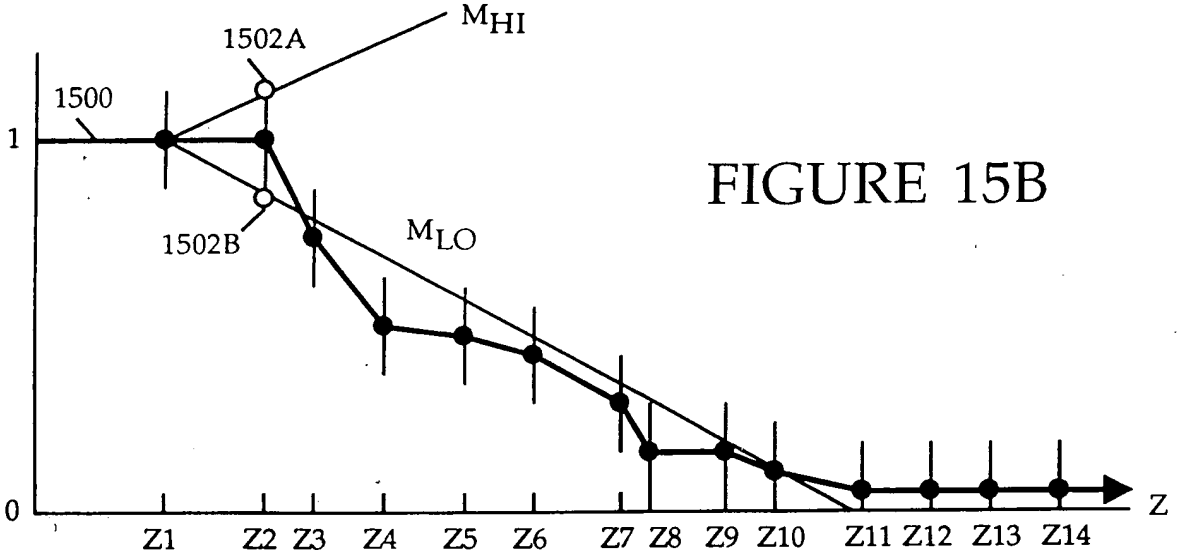

FIGURE 15B

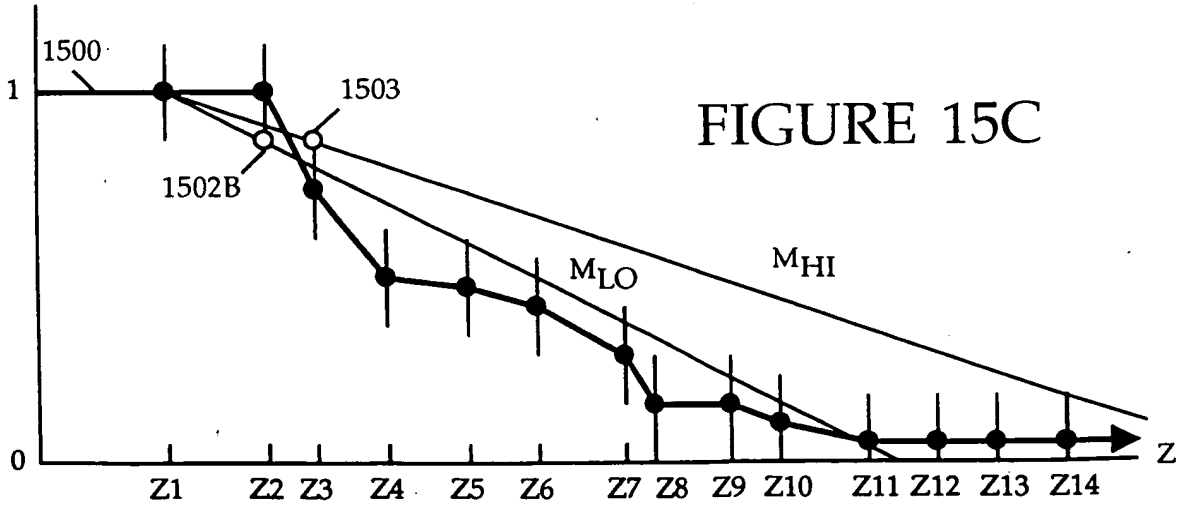

FIGURE 15C

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
Sheets of drawings 16 of 25

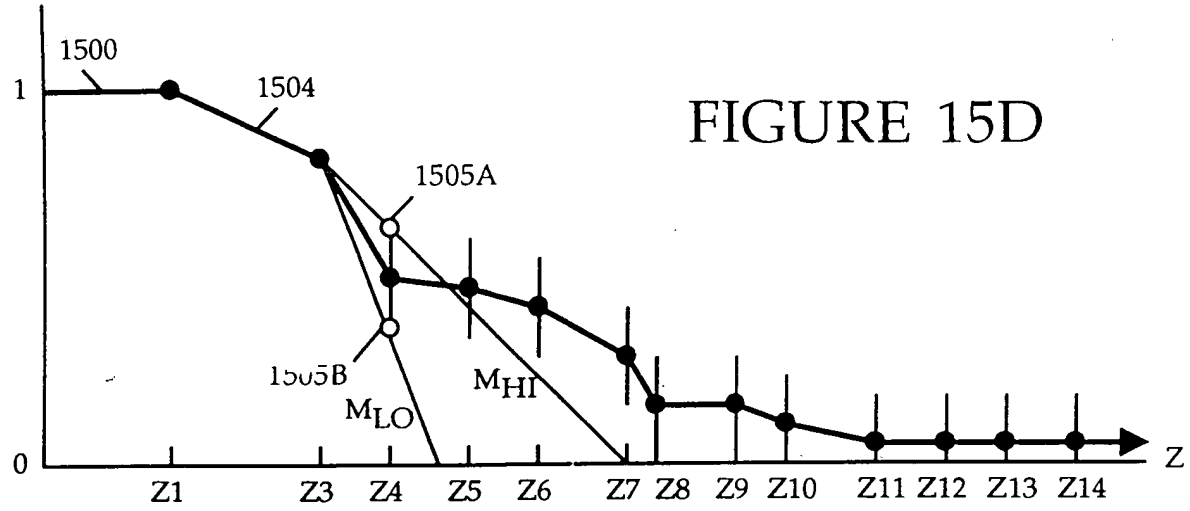

FIGURE 15D

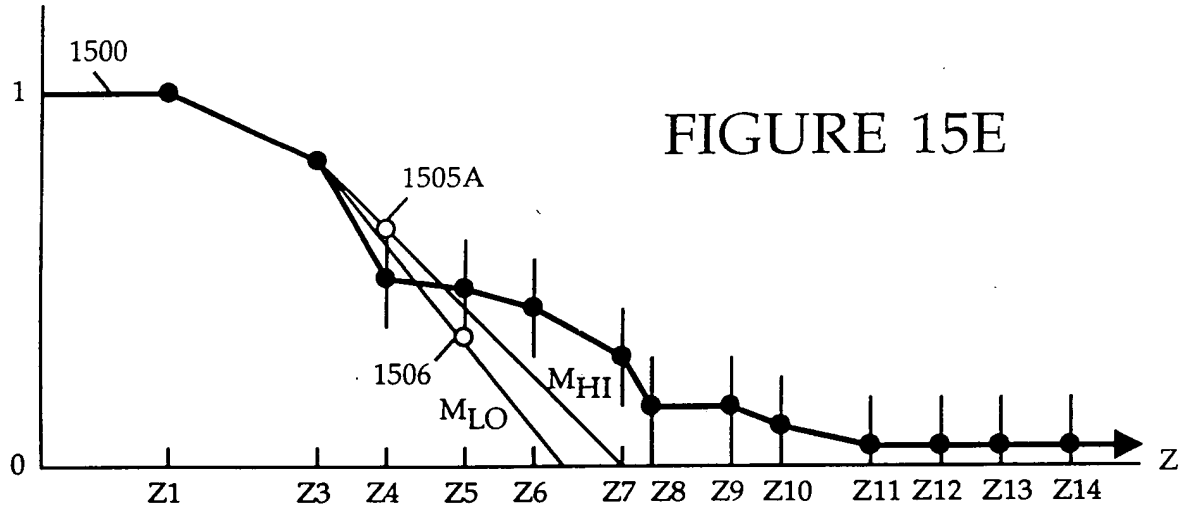

FIGURE 15E

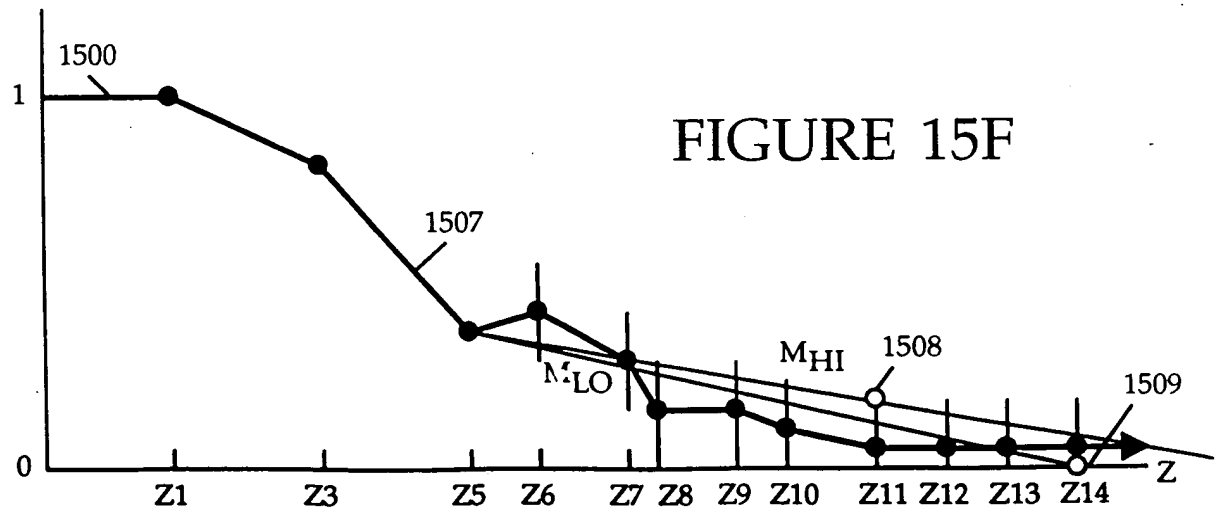

FIGURE 15F

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
Sheets of drawings 17 of 25

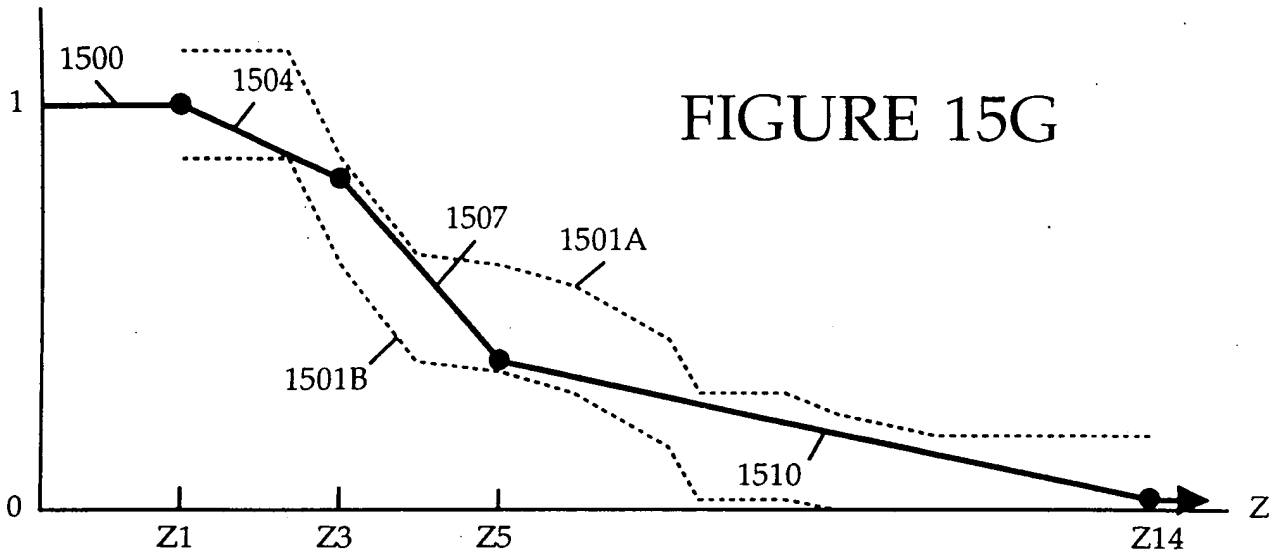

FIGURE 15G

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
Sheets of drawings 18 of 25

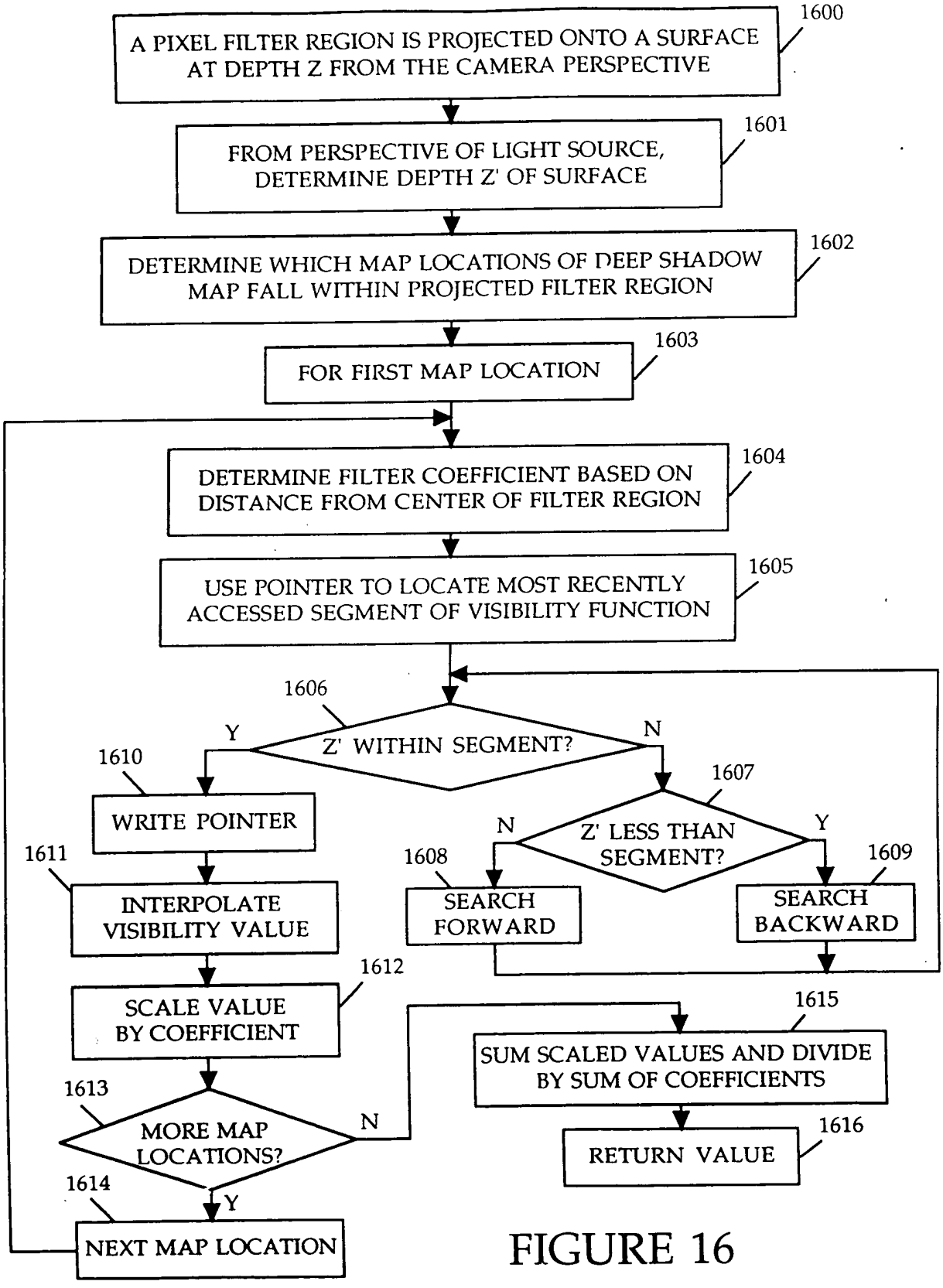

FIGURE 16

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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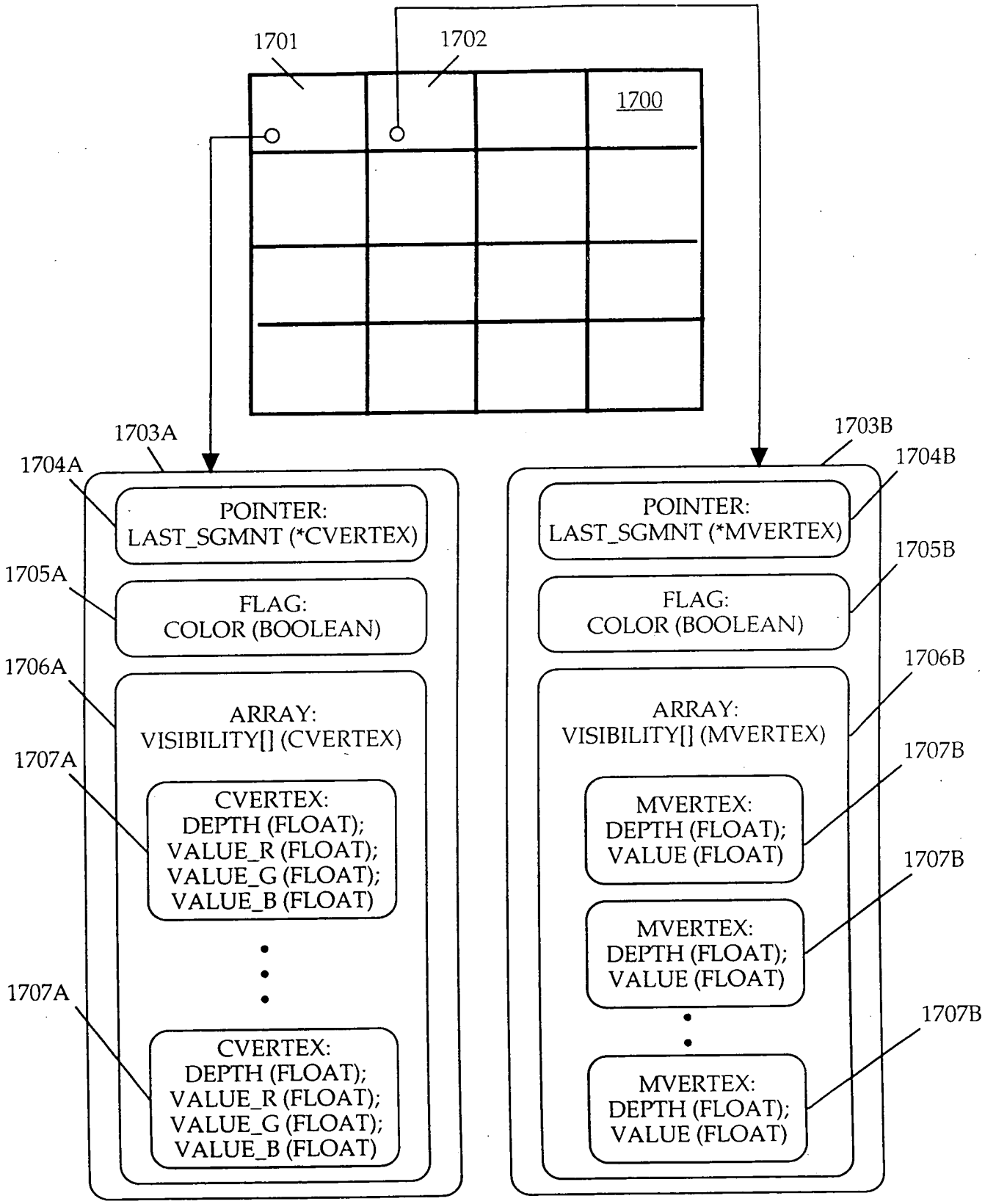

FIGURE 17

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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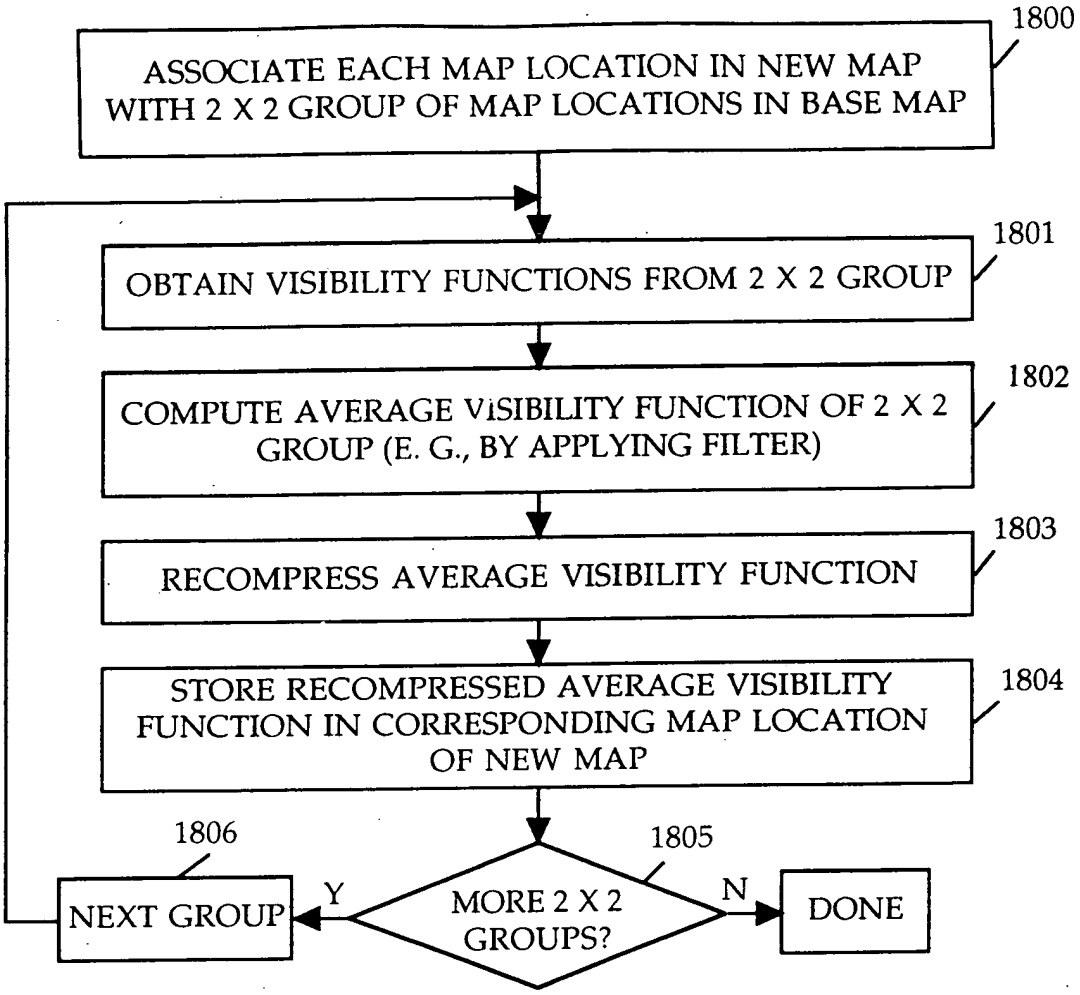

FIGURE 18A

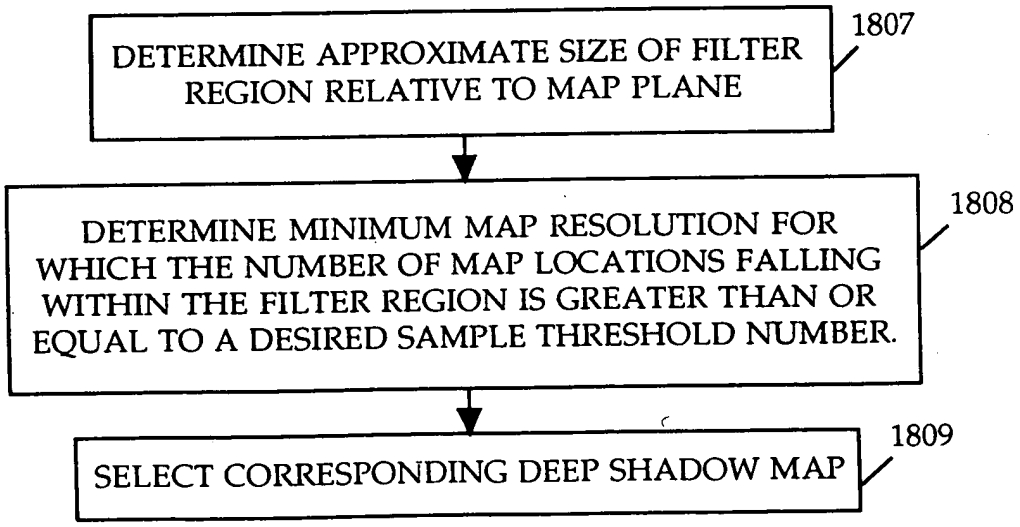

FIGURE 18B

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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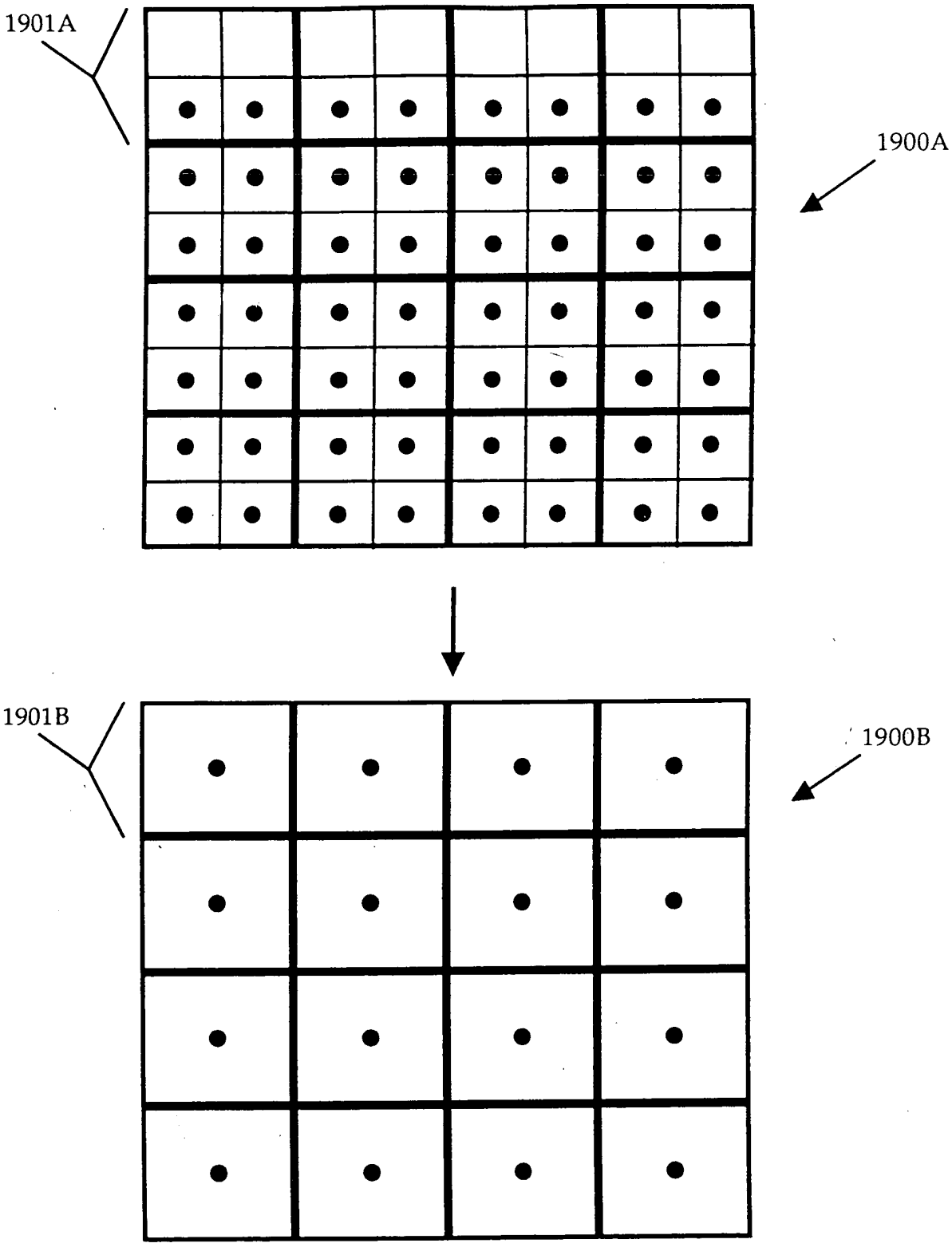

FIGURE 19

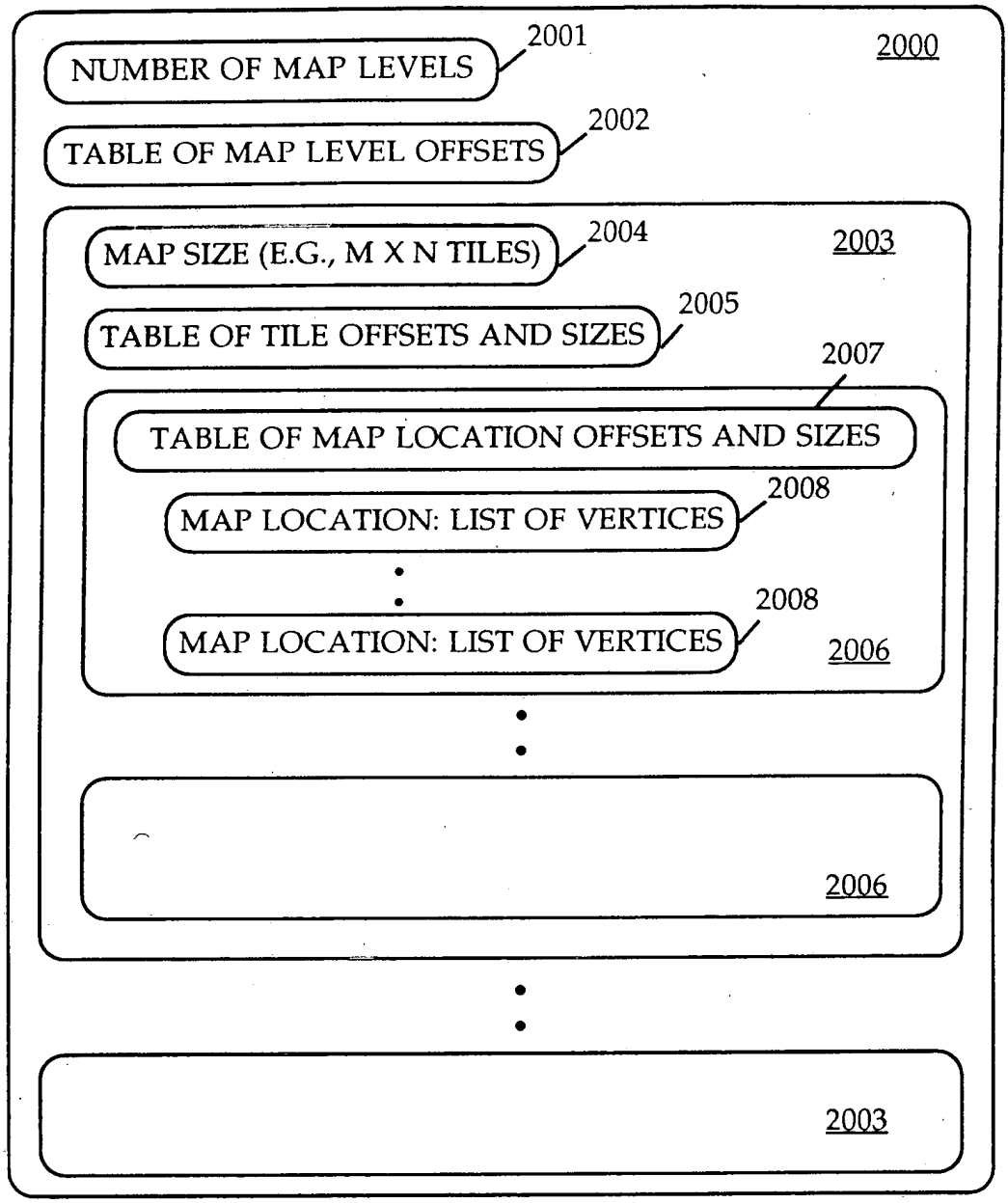
NUMBER OF MAP LEVELS
2001
2000
TABLE OF MAP LEVEL OFFSETS
2002
MAP SIZE (E.G., M X N TILES)
2004
2003
TABLE OF TILE OFFSETS AND SIZES
2005
2007
TABLE OF MAP LOCATION OFFSETS AND SIZES
MAP LOCATION: LIST OF VERTICES
2008
MAP LOCATION: LIST OF VERTICES
2008
2006
2006
2003

FIGURE 20

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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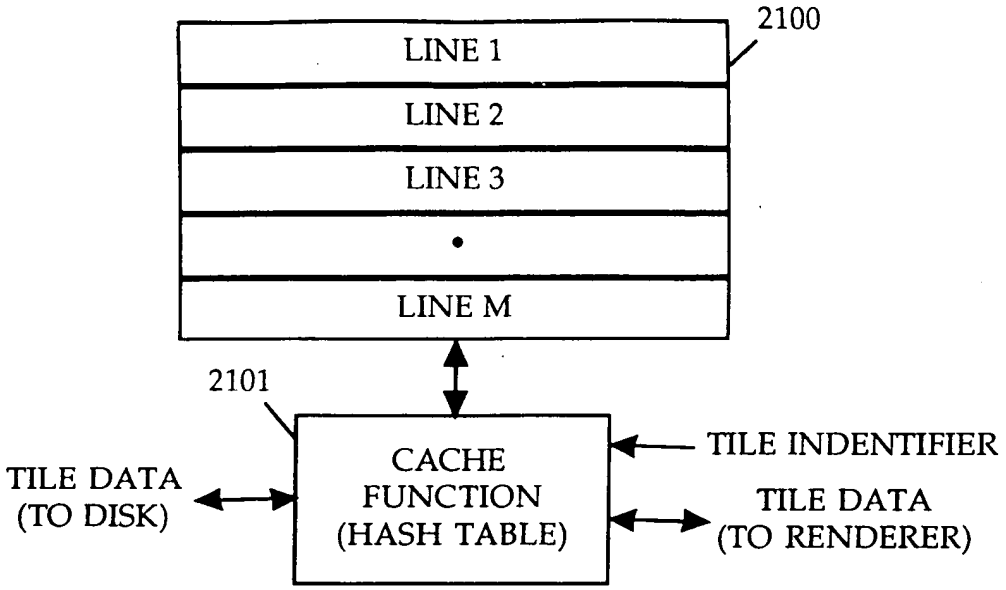

FIGURE 21

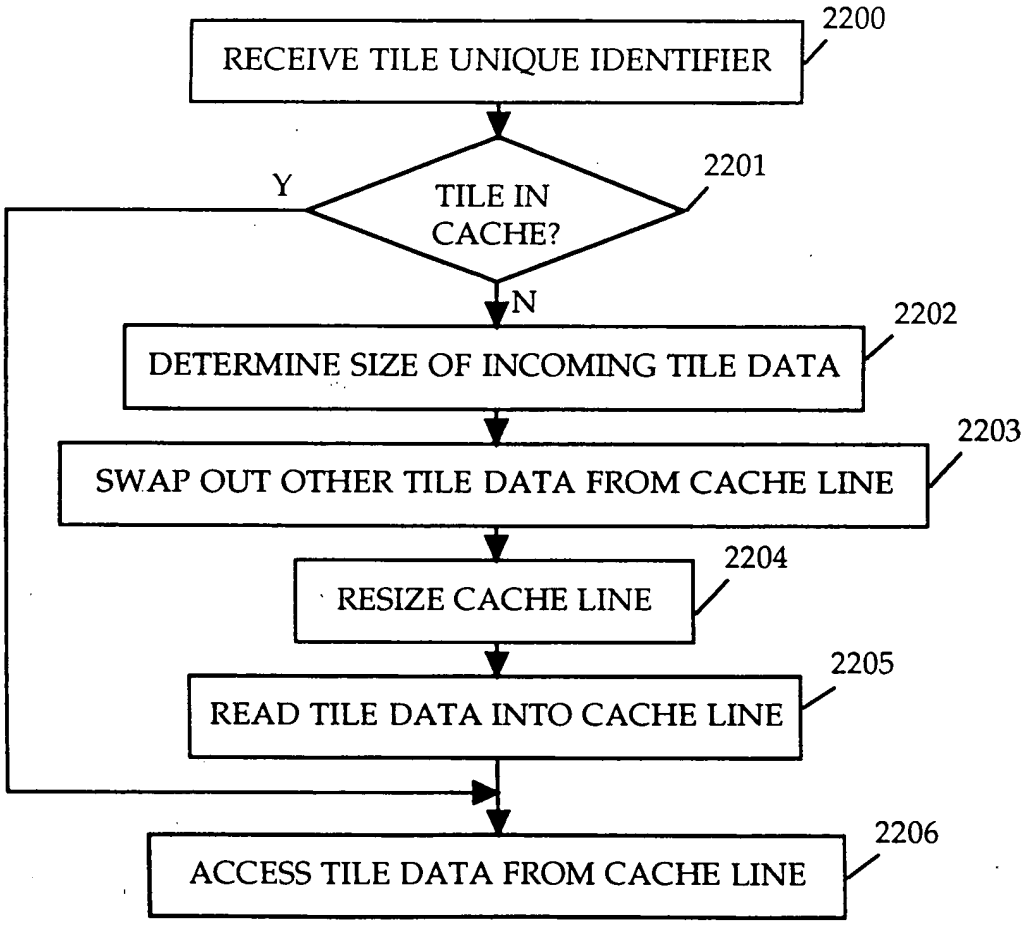

FIGURE 22

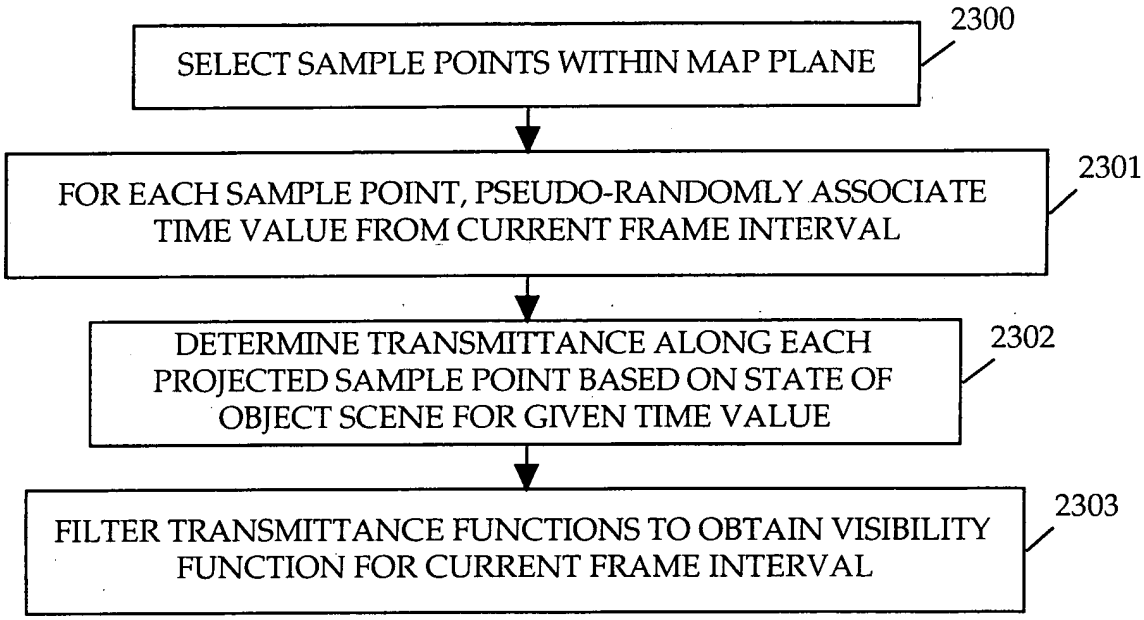
SELECT SAMPLE POINTS WITHIN MAP PLANE
2300
FOR EACH SAMPLE POINT, PSEUDO-RANDOMLY ASSOCIATE TIME VALUE FROM CURRENT FRAME INTERVAL
2301
DETERMINE TRANSMITTANCE ALONG EACH PROJECTED SAMPLE POINT BASED ON STATE OF OBJECT SCENE FOR GIVEN TIME VALUE
2302
FILTER TRANSMITTANCE FUNCTIONS TO OBTAIN VISIBILITY FUNCTION FOR CURRENT FRAME INTERVAL
2303

FIGURE 23

021751-001710US
Daniel Mao, Reg. No. 51,995
Telephone: 650-326-2400
Title: Method and Apparatus for Rendering Shadows
Inventors: Thomas David Lokovic et al.
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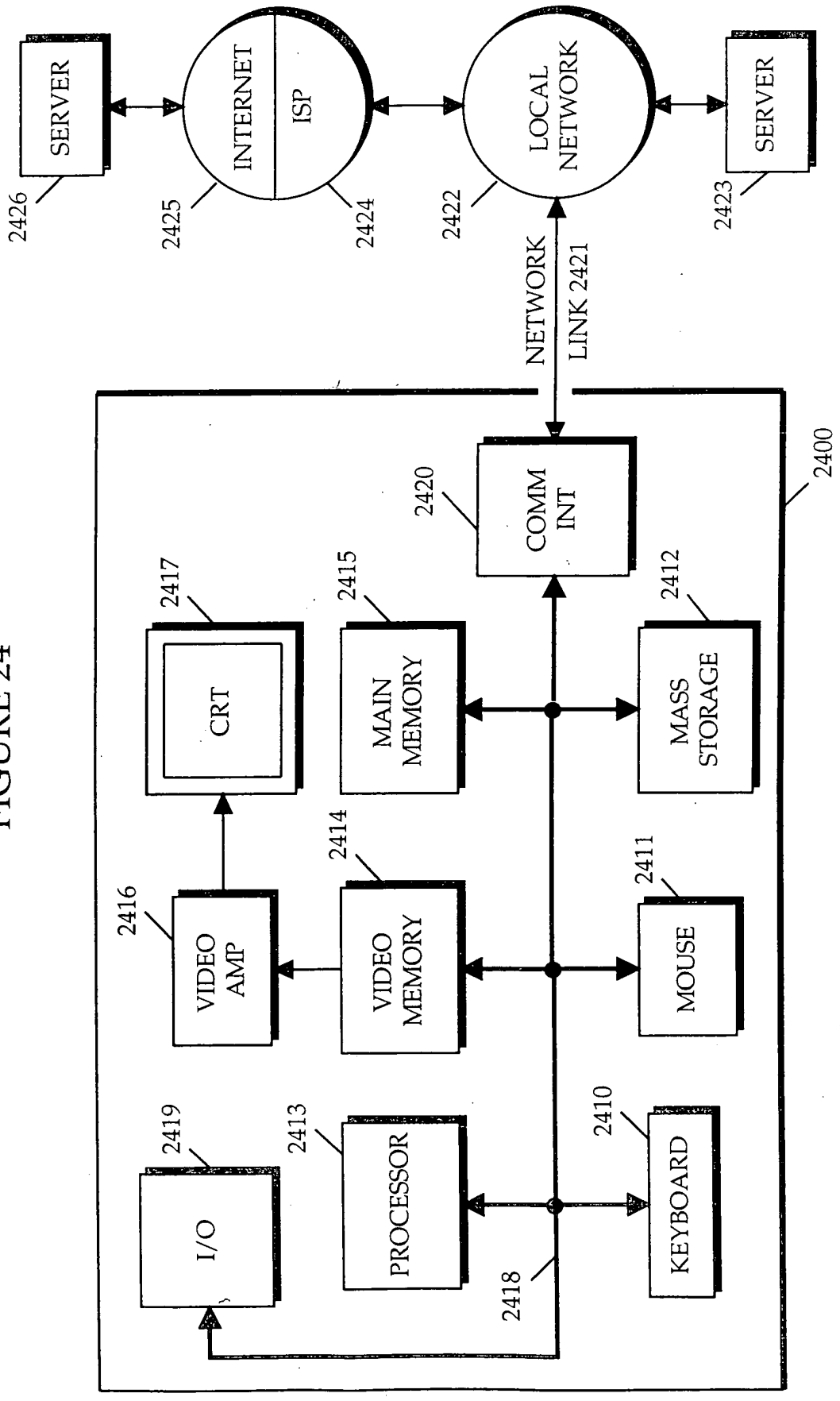
FIGURE 24